

# West Mojave Plan

## Draft Evaluation Report

### Suggested Conservation Strategies for Mohave Ground Squirrel and Appendices

Working Draft  
September 14, 2000

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# CHAPTER THREE

## MOHAVE GROUND SQUIRREL

### *(Spermophilus mohavensis)*

**Status:** Federal: None                      California: Threatened

**Date of Evaluation:** April 1, 1998; May 5, 1998; October 28, 1998; November 11, 1999; May 26, 2000

**Attendees:** Black, Bransfield, Goss, Gustafson, Haigh, Jones, Laabs, LaPre, LaRue, Leitner, Recht (by phone), Thompson

Development of a successful conservation strategy for the Mohave ground squirrel (MGS; squirrel) is a critical element of the West Mojave Plan (Plan). Accordingly, evaluators representing the California Department of Fish and Game (Department), the U.S. Fish and Wildlife Service (Service), Bureau of Land Management (BLM), and researchers on the species met on three occasions in 1998, in November 1999, and in May 2000 to assess the effectiveness of current MGS management, identify management shortfalls, and recommend a conservation strategy.

The approach developed by the evaluators includes designation of management areas intended to protect habitat elements needed to sustain viable MGS populations, particularly during drought conditions. Prescriptions are suggested to guide MGS management within a proposed MGS Conservation Area.

The chapter is organized as follows:

- Part A, *Background and Process*, describes the studies, discussions, and conclusions that led to the proposed conservation strategy.
- Part B identifies *Biological Goals and Objectives*.
- Part C presents the *Proposed Conservation Strategy*.
- Part D addresses *Anticipated Take* of the squirrel to be authorized by the incidental take permit.
- Part E, *Permit Compliance Summary*, examines the likely success of the recommended conservation strategy in meeting the biological goals and objectives.
- Part F, *References and Literature Cited*
- *Appendices* present additional background information.

### **Part A**

## Background And Process

In arriving at a proposed reserve design and conservation strategy, evaluators considered (1) pertinent MGS life history information, (2) threats to the species, and (3) past management criteria and approaches that have been applied in an effort to manage MGS.

### PERTINENT MGS LIFE HISTORY INFORMATION

Research by P. Leitner and B. Leitner at the Coso grazing-exclosure study sites at China Lake suggests several important factors that could be vital to selecting lands for long-term MGS conservation. In the Coso region, (1) the MGS apparently foregoes reproduction during years of insufficient rainfall (and, concomitantly, insufficient annual plant production); (2) during unfavorable years (i.e., during drought or when annual precipitation is below about 75 mm), the MGS forages, to a large degree, on winterfat (*Krascheninnikovia lanata*) and spiny hopsage (*Grayia spinosa*) and is able to attain sufficient body mass (i.e., around 180 g) to enter estivation by late May or early June; (3) during favorable years, the MGS consumes winterfat and spiny hopsage, among others, (i.e., saltbush [*Atriplex* spp.]) until annual forbs appear, at which time they switch to those available species; under such conditions, they may remain active until the end of August (Leitner and Leitner 1989, 1990, 1996a, 1996b, 1998; Leitner et al. 1995, 1997); and (4) some juveniles will disperse at least 3-4 miles from their birthplace (Leitner 1998a).

At this time, it is not known if the results of the Coso studies apply to the MGS in the southern and central portion of its range, where similar studies have not been performed. It is not known to what extent genetic variation may exist within the species. Also, no one has studied the effects of inter-breeding with round-tailed ground squirrels (*Spermophilus tereticaudis*) on MGS population dynamics, although Krzysik (1994) provides detailed discussion on potential effects. There are climatic and geological variations throughout the range that likely affect MGS ecology: many areas to the south (1) receive less rainfall than the Coso Region; (2) are dominated more by creosote bush than Mojave mixed woody scrub; and (3) contain extensive areas that are well below the Coso, 3,500 to 5,000-feet elevation.

Unlike the threatened population of the desert tortoise which occurs in four different states, the known geographic range of the MGS lies entirely within the planning area. Agency personnel and other scientists familiar with the squirrel believe that within the northern portion of its range are areas of high-quality habitat that are necessary for survival during drought years; there is no evidence that similar source areas occur throughout much of the southern portion of the range. These areas, into which populations likely shrink during adverse climatological conditions, are termed “drought refugia” or “source areas.” Under favorable environmental conditions, populations in the source areas expand and disperse into adjacent areas (Laabs 1998). Source areas and dispersal areas (also called linkages and interconnections) are considered to be essential to

the viability and persistence of the species. The areas into which the MGS disperses during favorable times (“adjacent areas”), likely are important to the welfare of the species, as well.

Unfortunately, scientists do not have enough information about MGS persistence, dispersal, gene flow, and habitat requirements to be able to identify with confidence the location of the essential source and dispersal areas. These workers cannot reliably predict the occurrence of the MGS based on habitat features such as soil type and vegetation community (Clark 1993; Hoyt 1972; Rempel and Clark 1990; Scarry et al. 1996; Zembal and Gall 1980). What can be said is that the squirrel is absent from dry lake beds, lava flows, and steep, rocky slopes (Clark 1993). It may have been extirpated from Lucerne Valley (Wessman 1977) and other areas of significant urbanization (Laabs 1998).

The data base includes 260 known records of the MGS throughout its current and historic range (see Map 7 in “West Mojave Evaluation Report, Map Volume - Black and White Maps,” dated 22 September 1999). Except for the studies performed at Coso and several studies at Fort Irwin, no trapping efforts have persisted at a given site for more than a few seasons. Krzysik (1994) reports that a total 51 different sites had been trapped for rodents on Fort Irwin: 38 sites were sampled in only a single year, 7 were sampled in 2 different years, 1 site for 3 years, 1 site for 4 years, 2 sites for 5 years, and 2 sites for 6 years. Although the available information provides a wealth of data points for MGS occurrence, it’s usefulness is significantly limited in the following ways:

- In the absence of trapping efforts over multiple, consecutive years, one cannot know if trapped squirrels were resident or dispersing through the area when they were caught.
- Adult animals are more likely to be resident than juveniles, but most of the records do not indicate the ages of captured squirrels.
- The absence of data points does not indicate absence of the MGS, but likely indicates that focused studies were not performed in those areas. In fact, most records tend to occur (1) along roadsides where MGS observations are facilitated by easy, vehicular access; (2) in the Indian Wells Valley where Rempel and Clark (1990) performed extensive trapping studies; and (3) in the Coso area where Leitner et al. performed their studies (Leitner and Leitner 1989, 1990, 1996a, 1996b, 1998; Leitner et al. 1995, 1997).

## **THREATS AFFECTING THE MGS**

Laabs (1998) (see Appendix MGS-7), citing the Department (1992), identified destruction and degradation of MGS habitat as the primary threats to the species. Other threats

included urbanization (especially around Palmdale, Lancaster, Victorville, and Hesperia), domestic and feral cats and dogs, mortality on paved and dirt roads, agricultural development, mining and energy development, off-highway vehicles, military development, and sheep and cattle grazing. Sheep and cattle utilize winterfat and spiny hopsage as highly preferred forage species. Cattle often consume considerable amounts of both shrubs in winter months.

Except for cats, the threats listed by Laabs (1998) are among the same threats summarized by Boarman (1999) as affecting the desert tortoise. In reviewing Boarman's (1999) analysis, the BLM planning team concluded that 14 of the 22 threats identified as affecting tortoises would also predictably affect the MGS (no additional threats were identified), as follows:

*14 Threats Affecting Tortoises and Squirrels:*

Urbanization & Energy Development, Construction, Off-highway Vehicles, Military Operations, Roads/Highways/Railroads, Agriculture, Utility Corridors, Fire, Livestock Grazing, Mineral Development, Non-off-highway Vehicle Recreation, Invasive Weeds, Commercial Uses, Drought.

*2 Threats Affecting Tortoises But Not Likely Affecting Squirrels:*

Vandalism, Handling & Manipulation.

*6 Threats Affecting Tortoises With Unknown Effect on Squirrels:*

Disease, Landfills & Transfer Stations, Subsidized Predation, Garbage & Litter, Noise, Wild Horses & Burros.

About half of the mitigation measures identified for the tortoise were considered to be applicable to address the 14 threats expected to affect the MGS (see Part C of this chapter). Other threats identified for the tortoise are not expected to affect the MGS for the following reasons:

- Vandalism (shooting, flipping over, etc.) and handling (collecting, unauthorized translocation, etc.) are impacts documented for tortoises that do not likely affect the MGS. Given their cryptic appearance and fast movement, it is expected that squirrels are rarely caught or handled. Handling may occur during unauthorized trapping in the desert, but this threat has not been documented and most small mammal trappers have a memorandum of understanding with the Department, which either restricts or authorizes trapping of the MGS.
- Diseases affecting tortoises include Upper Respiratory Tract Disease and cutaneous dyskeratosis (a shell disease), neither of which affects the MGS. There are no known diseases affecting the MGS at this time.

- Landfills, transfer stations, garbage and litter, and subsidized predation are documented threats affecting tortoises due to the increase of common ravens and subsequent predation on juvenile tortoises. Similar predation pressures on the MGS are not documented.
- Adverse impacts associated with noise have not been documented.
- The primary management areas identified for tortoise conservation are well south and west of areas occupied by wild horses and burros. As such, this impact relative to the tortoise was not discussed, and consequently, there was no discussion of the potential impact on MGS populations. Therefore, no prescriptions were identified to manage wild horses or burros in MGS habitat. China Lake Naval Air Weapons Station's ultimate goal is to eradicate feral burros, via authorized round ups and subsequent adoption, from the entire base (T. Campbell, pers. comm. to E. LaRue). This action likely will benefit the MGS, as squirrels and burros occur together in the northern portions of the MGS range.

## **PREVIOUS RECOMMENDATIONS FOR MGS RESERVE DESIGN**

Several existing documents identify reserve design and other factors that have been considered in planning for MGS conservation. A West Mojave Plan conservation strategy that meets conservation goals and objectives is necessary to support the permits that are intended to be issued as part of the Plan.

### **1991 Reserve Design Criteria**

A 1991 Department memorandum (Rempel 1991) indicated that the following reserve design criteria were applicable for MGS conservation:

- Big is better. Large preserves support more complete and viable ecological functions.
- Preserves should be located throughout the current range of the species.
- Preserves should be interconnected by broad bands of occupied habitat.
- Preserves should incorporate existing protected habitat (e.g., Coso mitigation area at China Lake, American Honda and LUZ mitigation areas near California City, Desert Tortoise Research Natural Area [DTNA], and BLM Areas of Critical Environmental Concern [ACECs]) to the maximum extent possible.
- Preserves and their interconnections should incorporate public lands where possible, especially where current protective measures are adequate for the species



(e.g., ACECs, Goldstone Deep Space Communications Complex, Red Rock Canyon State Park).

- Preserves should protect multiple species and important habitats to the extent possible (e.g., DTNA, Fremont Valley, Little Dixie Wash [south of Inyokern and entering the southwestern portions of Ridgecrest], etc.).
- Preserves should simplify management issues (maximize surface-to-perimeter ratios) and avoid major conflicts where possible (e.g., avoid California City, developed portions of Indian Wells Valley).
- Preserves should incorporate the best remaining habitat if the opportunities exist in those locations; avoid fragmented ownerships where possible.
- Preserves should include all (1) vegetation types, (2) slopes and aspects, and (3) soil types used by the MGS.

### **1993 Reserve Design Criteria**

A 1993 BLM report entitled “*Goals and objectives of Mohave ground squirrel protection and Zone A monitoring*” (Clark 1993) provided a brief summary of MGS life history information, identified potential management areas (each referred to as “Zone A”), and briefly outlined results of recent studies completed by Dr. Phil Leitner. This document is summarized in the following bulleted list:

- The Department has identified two major threats to the species, as follows: (1) degradation and destruction of its habitat, and (2) isolation of individual populations due to habitat fragmentation.
- Suggested biological goals are to ensure long-term survival of MGS populations distributed throughout the range of the species, and to ensure connecting bands of contiguous habitat to allow for gene flow between these population areas.
- To attain the goals, recommended objectives are to establish protection zones throughout the range of the MGS that are large enough to sustain long-term viable populations of the species, and to establish corridors of habitat between these protection zones to allow for gene flow between populations.
- The following criteria are used for selecting locations of high-quality MGS habitat, each of which is identified as a zone of protection and termed “Zone A”:
  - Large numbers of MGS records in the area and undisturbed habitat; or,
  - Large numbers of MGS records around the perimeter of an area with

- contiguous undisturbed habitat throughout the area; or,
  - MGS records over long periods of time with continued undisturbed habitat.
- Medium-quality habitat is identified as areas with the following attributes:
  - Numerous MGS records, but habitat degraded by impacts; or,
  - Some MGS records over a long time period, with relatively undisturbed habitat.
- Each Zone A must be large enough to sustain populations of 1,000 breeding females under the most adverse conditions. Therefore, if the density of breeding females following three drought years is approximately one adult female per 20 to 60 acres, then the minimum of 60,000 acres of habitat ( $\pm$  94 square miles) would be required to maintain the minimum of 1,000 adult females.
- Each Zone A should include the greatest diversity of plant communities possible.
- Each Zone A should be comprised of as much public land as possible, consistent with goals and objectives, to minimize the need to acquire private land holdings.

Using these criteria in 1993, Department personnel and MGS researchers identified nine polygons of “high habitat quality” (“A” zones) and 10 polygons of “medium habitat quality” (“B” zones) as potential conservation areas for the MGS. These included a diverse sampling of plant communities inhabited by the squirrel. A sixth area north of Trona was identified as an important location for a habitat corridor between the north and other portions of the range. A 1993 Department report (Gustafson 1993) warned that, “Since it is conceivable that populations of the Mohave Ground Squirrel might decline until they occur only on A-zones, then A-zones must be adequate in quality and quantity of habitat as well as pattern of distribution to ensure survival of the species.”

### **1998 Reserve Design Criteria**

It became apparent to the evaluators that the 1993 polygons were not appropriate as conservation areas for the squirrel, for the following reasons:

#### *Habitat*

- The polygons were described as “high habitat quality” areas and “medium habitat quality” areas. Neither the Leitner’s studies (Leitner and Leitner 1989, 1990, 1996a, 1996b, 1998; Leitner et al. 1995, 1997), which are the most comprehensive to date, nor others (Aardahl and Roush 1985; Scarry et al. 1996) attempted to definitively indicate what comprises “quality habitat.” As such, evaluators for the current conservation strategy agreed that designations of “medium” and “high” quality habitat were not justifiable.

- The polygons did not include “...the greatest diversity of plant communities possible...,” which has been demonstrated through GIS (geographical information system) analysis, and under-represented several plant communities where the MGS has been reported.

- The polygons were not “...interconnected by broad bands of occupied habitat...”

#### *Incomplete Information*

- The polygons were, in part, based on “...large numbers of [MGS] records...,” a description that is more indicative of intensively-studied areas or easily-accessed areas than it is of “hot spots” where the MGS occurs. Most of the available records do not differentiate between adults and juveniles of the MGS, so an unknown number of the records may actually pertain to dispersing rather than resident animals.
- The polygons were designed, in part, by extrapolating preliminary results obtained for squirrels occurring in the Coso Region (Leitner and Leitner 1989, 1990) to areas to the south. The sizes of the 1993 polygons were based on expected densities of adult females observed in the Coso region during drought years (i.e., one adult female per 20 to 60 acres), when in fact, there are no available data to determine how many adult females occupy any given area to the south in either drought or non-drought years.
- In 1993 the planners did not know of the dispersal capabilities of juvenile squirrels. Long-distance dispersal of juveniles in the Coso region appears to take place within a two- to three-week period when the young are about two months of age (they are usually born around April 1). Evidence so far shows that natal dispersal is male-biased, but that young females can also move up to three to four miles within a very brief window of time, so they can be far from their birthplace by July of their first year. Since most of the 1993 polygons were based on a reserve size of about 94 square miles (i.e., 5.3-mile radius), and juveniles can disperse three to four miles between April and July of their first year (P. Leitner, pers. comm. to E. LaRue, 8 April 1999), many animals born inside the proposed 1993 management areas could easily disperse into adjacent, unprotected areas. This dispersal capability supports the need for larger, contiguous conservation areas where management prescriptions would be implemented to maintain intact, unfragmented habitats in which the MGS may persist.

#### *Land Use*

- The polygons did not “...avoid major conflicts where possible (i.e., avoid California City...developed portions of the Indian Wells Valley).” For example, the proposed polygon around California City (279.5 square miles) encompassed 151 square miles of private land. The polygons south of Edwards Air Force Base

(Saddleback Butte area) and east of Highway 14 through Inyokern (north of Bowman Road) and Ridgecrest (east of Highway 395) were also largely comprised of private lands.

- The polygons did not “...incorporate existing protected habitat...to the maximum extent possible...,” which is particularly true for new wilderness areas that were designated in 1994, a year after the polygons were identified. In 1993, the planners did not have the benefit of reviewing resource management plans of Edwards Air Force Base and China Lake Naval Air Weapons Station, both of which manage extensive areas that benefit many biological resources, including the MGS.

#### *Proposed Remedies*

- Reduce the amount of private lands included in the proposed protection areas.
- Expand some of the polygons to capture more saltbush scrub and Mojave mixed woody scrub.
- Identify connecting bands of habitats between the various polygons.
- Enlarge the protection area to accommodate dispersal of juvenile animals.

### **Bureau of Land Management, California Desert Conservation Area Plan Management Areas and Prescriptions**

When the California Desert Conservation Area Plan (CDCA Plan) was drafted in 1980 the MGS was listed as “Rare” by the California Fish and Game Commission. For protective and planning purposes, the BLM collectively referred to State-listed Rare, Threatened, and Endangered species as “State-listed species.” Whereas “Critical Habitat” is a formal designation of essential habitats for *federally*-listed species, the BLM designated “Crucial Habitat” for the *State-listed* MGS and the, then, “BLM-sensitive” desert tortoise (critical habitat for the tortoise was not designated until 1994 following the 1990 federal listing). BLM also identified a group of management directions and prescriptions for MGS conservation (see below, “1980 CDCA Plan MGS Management Objectives, Actions Planned, and Implementation”).

**1980 CDCA Plan MGS Management Areas.** Five management areas were identified in 1980 that expressly or functionally were intended to benefit MGS conservation: Sierra-Mojave-Tehachapi Ecotone, Rose Valley, Desert Tortoise Natural Area, Western Mojave Crucial Habitat, and Superior Valley. A total of 773,000 acres (1,208 square miles) of BLM-managed lands were included within these five management areas. Appropriate management of this habitat would benefit MGS conservation. These areas are briefly described below.

- *Sierra-Mojave-Tehachapi Ecotone*  
This 162,000-acre (253 square miles) area was designated as the Jawbone-Butterbrecht ACEC in 1980. It is located along the western boundary of the range of the MGS and was identified in the CDCA Plan for MGS conservation.
  - *Rose Valley*  
This 18,000-acre (28 square miles) area occurs near the northwestern corner of the planning area on the western slope of the Sierra Nevada. A few tortoises also occur in the valley (as per BLM transects surveyed in 1999), but the area was identified solely for MGS management in 1980.
  - *Desert Tortoise Natural Area*  
This 26,000-acre (41 square miles) area was designated as an ACEC in 1980. It is found completely within the range of the MGS and was identified in the CDCA Plan for MGS conservation.
  - *Western Mojave Crucial Habitat (Tortoise)*  
At 512,000 acres (800 square miles), this management area was the largest of the five. A footnote indicated that this crucial habitat included the “Fremont/Stoddard Valleys (Desert Tortoise Crucial Habitat), Indian Wells Valley (Mohave Ground Squirrel Habitat), Fremont Valley (Mohave Ground Squirrel Habitat), Boron/Black Hills (Mohave Ground Squirrel Habitat), and Western Mojave Desert Saltbush Community.” Desert Tortoise Crucial Habitat located west of the Mojave River overlapped MGS crucial habitat, and appropriate management would benefit conservation of both species.
- The “Western Mojave Desert Saltbush Community Assemblage” was designated by the BLM as an “Unusual Plant Assemblage” and comprised much of the Western Mojave Crucial Habitat identified for the tortoise and the MGS in 1980. The area (depicted on Map 6 of the CDCA Plan, as amended) has its center near Kramer Junction, extending to Red Mountain to the north, Shadow Mountain Road to the south, Barstow to the east, and Boron and portions of California City to the west.
- *Superior Valley*  
This 55,000-acre (86 square miles) area was identified relative to the MGS and Joshua Tree Woodland. This woodland community is known to be occupied by the MGS with squirrels feeding on Joshua tree seeds, and is relatively common throughout areas surrounding Superior Valley, including Coolgardie Mesa where numerous MGS sightings have been reported.

It is important to note that the MGS distribution studies of Aardahl and Rousch (1985) were not completed until five years after completion of the 1980 CDCA Plan. Their study

was significant in that it extended the northern boundary of the known MGS range. In 1993, the Department (Gustafson 1993) revised the historic range map of the MGS to depict the current range, which no longer extends west of Highway 14 in areas south of the community of Mojave. Wessman's (1977) studies extended the known range well into Fort Irwin and found that the MGS may be extirpated from the Lucerne Valley and Rabbit Dry Lake area, where the species was first described. Much of this information has only become available since the CDCA Plan was completed, and has been used to better define the boundaries the evaluators propose for a final MGS Conservation Area.

**1980 CDCA Plan MGS Management Objectives, Actions Planned, and Implementation.** The Wildlife Element of the CDCA Plan, as amended, listed applicable public laws, acts, and executive orders that provide direction to the BLM in managing wildlife resources.

*Objectives of the Wildlife Element, CDCA Plan, as amended.*

Specific objectives were given as follows and are taken verbatim from the CDCA Plan, as amended (U.S. Bureau of Land Management 1999), unless otherwise noted:

- Avoid, mitigate, or compensate for impacts of conflicting uses on wildlife populations and habitats. Promote wildlife populations through habitat enhancement projects so that balanced ecosystems are maintained and wildlife abundance provides for human enjoyment.
- Develop and implement detailed plans to provide special management for:  
(a) areas which contain rare or unique habitat, (b) areas with habitat which is sensitive to conflicting uses, (c) areas with habitat which is especially rich in wildlife abundance or diversity, and (d) areas which are good representatives of common habitat types. Many areas falling into these categories contain listed [footnote] species, which may become the focus of management as indicator species.

[Footnote given at the bottom of page 28 in the CDCA Plan, as amended:  
"Listed Species: A plant or animal species which is on the U.S. Fish and Wildlife Service list of threatened or endangered species, the California State list of rare, threatened or endangered species, or the BLM California State list of sensitive species."]

- Manage those wildlife species on the Federal and State lists of threatened and endangered species and their habitats so that the continued existence of each is not jeopardized. Stabilize and, where possible, improve populations through management and recovery plans developed and implemented cooperatively with the U.S. Fish and Wildlife Service and the California Department of Fish and Game.
- Manage those wildlife species officially designated as sensitive by the BLM for California and their habitats so that the potential for Federal or State listing is minimized.

- Include consideration of crucial habitats of sensitive species in all decisions so that impacts are avoided, mitigated, or compensated.

\* \* \*

*Actions Planned Under the CDCA Plan, as amended.*

Several management tools were provided to meet the objectives of the CDCA Plan's Wildlife Element. The primary management tools were development of management plans for Areas of Critical Environmental Concern (ACEC), development of Habitat Management Plans (HMP), and route designation in Multiple Use Class L lands.

- Management prescriptions for ACECs identified for wildlife resources include aggressive management actions to halt and reverse declining trends and to ensure the long-term maintenance of these critical fish and wildlife resources. Management prescriptions for ACECs receive the priority in the BLM for preparation, implementation, and funding.
- Habitat Management Plans are detailed plans developed specifically for wildlife habitats or species which require intensive, active management programs. HMPs can be placed in any BLM multiple-use class. Multiple-use class guidelines set the limits for the recommendations that can be included in an HMP. Habitat Management Plans are of lower priority than ACECs.
- The CDCA Plan anticipated that some fish and wildlife resources requiring special management attention could be protected by Multiple-Use Class L through the number and location of off highway vehicle routes approved.

In addition, Special Areas (SA) were designated to highlight habitats and species known to be important for special consideration during the environmental assessment process conducted for any kind of proposed project.

*General Policies of the Wildlife Element, CDCA Plan, as amended.*

In addition to the use of HMPs, ACECs, route approvals, and SAs, the following general policies were intended to accomplish the objectives of the CDCA Plan's Wildlife Element [only policies pertinent to the MGS are given below; see page 30 of the CDCA Plan, as amended, for a complete list]:

- The protection afforded federally and State-listed species will remain the same for all multiple-use classes.
- Protective provisions, stipulations, or objectives for wildlife will be considered in all permits, licenses, activity plans, etc., to avoid or minimize

habitat deterioration.

- Inventories for State-listed species were to be completed within three years of CDCA Plan acceptance or final listing of a new species by the State. Habitat Management Plans for State-listed species were to be completed within two years following the completion of the inventories. Activities having an impact on State-listed species will be addressed in the environmental assessment process.

Finally, the CDCA Plan, as amended, concluded that, “In general, where other land uses (grazing, vehicle use, intense visitor use) are found to adversely affect officially listed and sensitive species or other significant wildlife resources, action will be taken to remove or reduce impacts.”

Table 2 in the CDCA Plan, as amended, listed State and federal status, proposed management designations, other designations, specific management actions, and general long-term goals for each of the five management areas discussed in the previous section, which are reiterated in the following table<sup>1</sup>.

| <b>Management Area Descriptions</b>    | <b>Sierra Mojave Techachapi Ecotone</b> | <b>Rose Valley</b> | <b>Desert Tortoise Natural Area</b> | <b>Western Mojave Crucial Habitat</b> | <b>Superior Valley</b> |
|--|---|--------------------|-------------------------------------|---------------------------------------|------------------------|
| Acreage                                | 162,000                                 | 18,000             | 26,000                              | 512,000                               | 55,000                 |
| <b>Species Status Information</b>      |   |                    |                                     |                                       |                        |
| Target Species                         | MGS                                     | MGS                | Tortoise MGS                        | Tortoise MGS                          | Tortoise MGS           |
| Special Wildlife Habitat               | Yes                                     | ND <sup>2</sup>    | ND                                  | Yes                                   | Yes                    |
| <sup>3</sup> Federally Listed Species  | No                                      | No                 | No                                  | No                                    | No                     |
| State Listed Species                   | MGS                                     | MGS                | MGS                                 | MGS                                   | MGS                    |
| BLM Sensitive Species                  | No                                      | No                 | Tortoise                            | Tortoise                              | ND                     |
| <b>Proposed Management Designation</b> |   |                    |                                     |                                       |                        |

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<sup>1</sup>Information Source: Table 2 of the CDCA Plan, as amended, pages 32 and 33.

<sup>2</sup> ND = Not designated by the CDCA Plan for the expressed purpose.

<sup>3</sup> In 1980 the tortoise was not federally listed, but rather designated as a “BLM Sensitive Species.”



| <b>Management Area Descriptions</b>   | <b>Sierra Mojave Techachapi Ecotone</b> | <b>Rose Valley</b> | <b>Desert Tortoise Natural Area</b> | <b>Western Mojave Crucial Habitat</b> | <b>Superior Valley</b> |
|---|---|--------------------|-------------------------------------|---------------------------------------|------------------------|
| Area of Critical Environmental Concern  | Yes <sup>4</sup>                        | No                 | Yes                                 | No                                    | No                     |
| Special Area  | Yes                                     | Yes                | Yes                                 | Yes                                   | Yes                    |
| Habitat Management Plan   | 2-5 years                               | 2-5 years          | Complete                            | 2-5 years                             | 5-7 years              |
| <b>Other Designation</b>  |   |                    |                                     |                                       |                        |
| Sikes Act Agreement   | Yes                                     | Yes                | Yes                                 | No                                    | Yes                    |
| <b>Specific Management Actions Requiring Immediate Implementation (1-3 years)</b> |   |                    |                                     |                                       |                        |
| Control Vehicle Access  | Yes                                     | No                 | No                                  | Yes                                   | No                     |
| Cooperative Agreements  | Yes                                     | No                 | No                                  | Yes                                   | No                     |
| Increase Surveillance   | Yes                                     | No                 | Yes                                 | Yes                                   | No                     |
| Restrict Camping and/or Parking   | Yes                                     | No                 | No                                  | Yes                                   | No                     |
| <b>General Long Term Goals</b>  |   |                    |                                     |                                       |                        |
| Land Acquisition  | No                                      | No                 | Yes                                 | Yes                                   | No                     |
| Change Grazing Practices  | Yes                                     | No                 | No                                  | Yes                                   | No                     |
| Protect, Stabilize, Enhance Values  | Yes                                     | Yes                | Yes                                 | Yes                                   | Yes                    |

Habitat Management Plans were required for each of the five areas, to be finished no later than 1987, with implementation occurring no later than 1989. Specific management actions varied, as did long term goals, but each of the five areas had the long term goal of protecting, stabilizing, and enhancing resource values. Table 3 in the CDCA Plan, as amended, indicated that, for the MGS, 24,000 acres (37.5 square miles) would be designated as an ACEC with an associated Habitat Management Plan, and that Habitat Management Plans would be drafted for two additional areas, on a total of 296,000 acres (462.5 square miles). To date, the ACEC has not been designated nor have the HMPs been drafted.

The management actions were designed to fulfill the habitat/ecosystem and species

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<sup>4</sup> Jawbone-Butterbrecht ACEC

management objectives described previously. Multiple-use class guidelines and specific actions regarding wildlife in other resource elements provide a framework for management. Within this framework ACECs, HMPs and route approvals are intended to enhance representative, unique, and sensitive, rare, threatened, and endangered species (U.S. Bureau of Land Management 1999).

**BLM's Rand Mountains Fremont Valley Management Plan.** The BLM's Final Rand Mountains Fremont Valley Management Plan (Rand Plan) was completed in August 1993 (U.S. Bureau of Land Management 1993), and covered an area of 65,020 acres (101.6 square miles) of public lands located 35 miles south of Ridgecrest and immediately north of the present California City boundary.

The Rand management area is important to the MGS. It encompasses about 38 square miles (24,320 acres) of designated crucial MGS habitat. And the Rand Plan ranked the MGS as second only to the desert tortoise on its list of the most sensitive wildlife resources in the management area.

Protective measures proposed for the tortoise and the MGS included (1) expansion of the existing 17,877-acre (28 square miles) West Rand Mountains ACEC to encompass an additional 13,120 acres (20.5 square miles) in the Fremont Valley; (2) "severe restriction" of multiple use activities; (3) reclassification of Class M lands in the ACEC expansion area and adjacent alluvial fan to Class L; (4) reduction of vehicle routes inside the ACEC; (5) construction of an 18-mile fence along the southern boundary to limit vehicular access; (6) prohibition of camping within the ACEC and restriction of camping outside the ACEC to within 25 feet of open routes; (7) acquisition of private lands; and (8) withdrawal of 32,590 acres (51 square miles) from mineral entry.

Implementation of the Rand Plan is underway. The 18-mile fence along the southern boundary has been completed. Route designation has occurred, with a limited trail network of 136 linear miles designated, signed, patrolled, and maintained. The remaining 635 miles of trails have been closed, mostly by signing. About 30 linear miles have been functionally closed using mechanical decompaction of the surface, pitting with hand tools, vertical mulching, hay bale barriers, water bars, and some planting. BLM estimates that about \$350,000 has been spent on restoration activities (Craig Beck, OHV Coordinator in Ridgecrest, pers. comm., September 2000). There have also been several thousand hours of work contributed by volunteers (California Off Road Vehicle Association, "Smitty's Volunteers," a local high school, among others) signing routes, maintaining kiosks, and making contact with riders.

Ranger patrols in the Rand Plan area have at times occurred weekly and at other times, due to personnel transfers and other reasons, occurred less often. Since 1993, most monitoring has been qualitative, with staff monitoring visitor use patterns, identifying problem areas for additional signing and restoration, and providing thousands of maps of

the approved route network to users. Formal monitoring began in the summer of 2000, using OHV grant money provided by the California Department of Parks and Recreation. Aerial photographs have been taken during the last five years to establish baseline conditions and facilitate formal monitoring. Reports are submitted annually to the Service to judge the success of implementing the terms and conditions given in the biological opinion issued for that management area (Dave Wash, Ridgecrest BLM, pers. comm., September 2000).

Some critical parts of the Rand Plan are still to be implemented: (1) The CDCA Plan has yet to be amended to reflect either the proposed 13,120 acre expansion or the multiple use class change; (2) no private lands have been acquired; and (3) there has been no mineral withdrawal. Evaluators felt that implementation of these measures would provide a valuable conservation tool for the MGS. Facilitating their implementation is considered a high priority for MGS conservation in the West Mojave Plan.

## **CURRENT RECOMMENDATIONS FOR MGS RESERVE DESIGN**

Even when the proposed remedies listed on page 3-9 were factored into the 1998 polygons, several evaluators expressed persisting concerns about the sizes and distributions of those polygons. The 1998 proposal was substantially modified in November 1999, when the Department recommended that a provisional management area be established pending the completion of additional research to determine the best habitat. In May 2000, the Service indicated that it could not endorse the establishment of a “provisional” management area. Therefore, the Service and the Department recommended that November 1999's proposed boundaries should be designated as a permanent “MGS Conservation Area.” In addition, they (1) identified a trapping study area in the northern portion of Antelope Valley, in Kern County; and, (2) identified an area south of Edwards Air Force Base where existing zoning would remain in place for the life of the Plan (estimated to be 30 years) to benefit range-wide conservation of this species.

## **Land Management Considerations**

**Public Lands.** A successful conservation plan for the squirrel depends upon the implementation and enforcement of specific protection measures to conserve the MGS on lands within permanent conservation areas. In many cases, this would be new protection measures not currently in place on public land. To ensure that the MGS persists over the long-term, a conservation plan must not only preserve habitat of adequate quality, size, shape, distribution, and connectivity, but it must have an element that severely restricts further loss, fragmentation, and degradation of that habitat. Further, there must be an active program of restoration through road-closure, retirement of grazing, and law enforcement. There must be a commitment to acquiring, from willing sellers, private in-holdings and other private lands identified by studies as necessary to protect essential

MGS habitat.

The West Mojave Plan will serve as the Habitat Management Plan for MGS conservation on BLM-managed lands, as per the CDCA Plan. Designating the MGS Conservation Area as an ACEC and Multiple-Use Class L (Limited) is consistent with the CDCA Plan, as are prescriptions given below in Part C relative to camping and parking, grazing, mining, and other land-use impacts. And the West Mojave Plan should endorse the full implementation of the Rand Mountains Plan, which would significantly benefit the MGS.

**Private Lands.** Current scientific information indicates that a successful conservation strategy for the MGS must include some lands now in private ownership. Otherwise the conservation area will be subject to development of private parcels with resulting fragmentation. It is important that all participants in the planning process appreciate that the entire burden of the West Mojave Plan cannot fall on public lands. Private properties needed for MGS conservation should be purchased from willing sellers. Remaining private lands should be subject to a development fee or development restrictions (see Part C of this chapter).

**Military Lands.** A difficult question that evaluators for this chapter discussed at length is whether any conservation strategy for the squirrel can be successful without the participation by the military departments. Lands at the China Lake Naval Air Weapons Station, including the Mojave B Range; Edwards Air Force Base; and the Fort Irwin National Training Center contain a significant portion of the geographic range of the squirrel.

The current missions at the three military installations provide some protection for the MGS. For example, there are approximately 35 square miles at Goldstone Deep Space Communications Complex on Fort Irwin that are relatively-protected MGS habitat. Also, 200,000 acres (312.5 square miles) at China Lake are being managed as desert tortoise critical habitat (U.S. Fish and Wildlife Service 1992), which also benefit the MGS. Approximately 377 square miles identified on Edwards Air Force Base in their Integrated Natural Resources Management Plan (Earth Tech 1997) directly provide MGS conservation. It is likely that most defacto protection of MGS habitat currently occurs on undeveloped and seldom-used portions of these installations.

Because the MGS is not federally-listed, military bases are not required to set policy intended to conserve this species. Evaluators for this chapter are not recommending how MGS habitat on these installations should be managed. Rather, their task has been to (1) identify areas outside military bases for MGS conservation and (2) document areas inside the bases that already effectively benefit MGS populations. However, the position of the Department and the Service is that the military departments, for those wildlands which are not needed for current missions on the installations, should generally manage for the greatest biodiversity of wildlife species and specifically manage local areas for listed and

other sensitive species. As part of general and specific management, the military should focus on rehabilitation of degraded lands. Undoubtedly, major changes in the military missions (e.g. if Fort Irwin were to train on portions of China Lake's Mojave B Range) would affect the total area presently protected. Environmental managers of the bases caution that this defacto protection could change if national security required modifications in the bases' current missions.

In developing this chapter's conservation strategy, evaluators concluded that a successful strategy for long-term protection of the MGS must include participation of the three military bases within the planning area. The importance of these bases to survival of the squirrel is due as much to their relatively-representative geographic locations in the northern, southwestern, and northeastern parts of the known range as it is to the amount, quality, and current management of habitat that the bases have. For long-term survival of the squirrel, the military departments must, at the very least, continue to conduct environmental affairs at their current levels.

The evaluators caution, however, that a conservation strategy for the MGS that includes the current defacto protection of the species on military installations cannot accommodate other new large-scale land uses on these installations, nor can it accommodate establishing new military lands. The conservation strategy assumes that any military lands with MGS habitat that are decommissioned will become public lands and part of the MGS Conservation Area. If the Fort Irwin National Training Center were to train personnel on the Mojave B Range or to expand onto the public lands of Superior Valley and environs, as proposed in April 1999, the evaluators propose that the Plan require the development of further protective measures for the MGS.

## MANAGEMENT PRESCRIPTIONS

The management prescriptions are considered "side boards" or indicators of the types of actions that the evaluators for this chapter expect would help conserve the MGS. A detailed and annotated discussion of the management prescriptions can be found in Part C of this chapter and in the Evaluation Report Appendices. Three different formats are presented in the appendices:

- *Appendix MGS-1* ("short version"): This is a list of proposed management prescriptions segregated into five categories.
- *Appendix MGS-2* ("tabulated version"): This includes tables that (1) list potential impacts to the MGS and its habitat in a matrix format; (2) list proposed management prescriptions to address those threats; and (3) further define the threat, identify its predominant occurrence and potential effects, and identify agency goals to address each threat.

- *Appendix MGS-3* (“long version”): This (1) summarizes the evaluation meetings in which management prescriptions were identified; (2) groups management prescriptions under associated threats; (3) provides the agencies’ goal statement, applicable management areas, and applicable and non-applicable jurisdictions; and (4) includes background information relative to each prescription.

## **Part B**

### **Measurable Biological Goals and Objectives**

Evaluators suggest the following specific goals and objectives:

#### **Biological Goal 1**

*Ensure long-term protection of the MGS.*

**Objective 1 for Goal 1:** Upon plan adoption, establish a Conservation Area of adequate size and configuration and manage it for the species.

**Objective 2 for Goal 1:** Upon plan adoption, develop cooperative management programs with military installations and assist these installations in developing and implementing conservation programs for the squirrel.

**Objective 3 for Goal 1:** Upon plan adoption, design management areas and implement prescriptions that will aid the BLM in realizing its goals, planned actions, and implementation identified in the CDCA Plan, and in the Rand Mountains Plan, with regards to MGS conservation.

**Objective 4 for Goal 1:** Upon plan adoption, establish a Biological Transition Area within the Plan area designated for incidental take and which would minimize impacts to the Conservation Area.

**Objective 5 for Goal 1:** Maintain existing zoning for the life of the Plan in northeastern Los Angeles County.

**Objective 6 for Goal 1:** Minimize and fully mitigate the impacts of the Plan’s authorized incidental take during the life of the plan.

#### **Biological Goal 2**

*Ensure that the squirrel’s ability to survive and reproduce is maintained and enhanced.*

**Objective 1 for Goal 2:** Monitor the effects of implementation of the Plan by tracking the permitted loss of MGS habitat at identified intervals throughout the life of the plan.

**Objective 2 for Goal 2:** Conduct studies needed to address effective restoration of degraded MGS habitat throughout the life of the plan.

**Objective 3 for Goal 2:** Conduct baseline studies to determine distribution and relative size of MGS populations within five years of plan adoption.

**Objective 4 for Goal 2:** Monitor identified populations and habitat throughout the life of the plan.

**Objective 5 for Goal 2:** Determine variation in genetic characteristics of the MGS throughout its range within 10 years of plan adoption.

## **Part C**

### **Proposed Conservation Strategy**

The conservation strategy proposed herein has the following parts:

- Designate an MGS Conservation Area, to be managed to prevent large-scale habitat loss, fragmentation, and degradation during the 30-year time period of the Plan.
- Implement and enforce conservation measures in the form of management prescriptions and allowable ground disturbance to minimize take of the MGS and its habitat within the MGS Conservation Area.
- Designate a Biological Transition Area surrounding pertinent portions of the MGS Conservation Area.
- Designate an area in northeastern Los Angeles County where existing zoning would not be changed over the life of the Plan.
- Conduct focused trapping efforts for the MGS in the northern portions of Antelope Valley, in Kern County.
- Adopt additional procedures, measures, and concepts to strengthen the Plan and guide its implementation.

### **MGS CONSERVATION AREA**

Using information presented in Part A of this chapter, evaluators propose an area for MGS conservation during the 30-year term of the Plan. The area includes much of the Western Mojave Crucial Habitat area identified for MGS protection in the 1980 CDCA Plan, as amended (U.S. Bureau of Land Management 1999), those portions of two

proposed Tortoise DWMAs lying within the geographic range of the squirrel (the Fremont-Kramer and Superior-Cronese Tortoise DWMAs), and additional land located to the north and west (see Map 3-1). The MGS Conservation Area is primarily on public land, because much of the privately-held land containing MGS habitat within the historic range has been developed, fragmented, or degraded.

Approximately 22 percent of the historic MGS range occurs within the two proposed Tortoise DWMAs. Evaluators expect that MGS populations within these areas will benefit from conservation measures that are implemented for the tortoise, as discussed later in Part C. Further, evaluators concluded that measures applied in less than a quarter of the known range of the squirrel are not adequate to provide for long-term conservation of the species. The proposed MGS Conservation Area satisfies the reserve design requirements discussed herein, facilitates BLM management for the species as outlined in the CDCA Plan, as amended, and meets with local Department and Service approval. Although the proposed MGS Conservation Area encompasses only about 39 percent of the historic geographic range, the lands include the best remaining, unfragmented habitat outside pertinent military installations on which MGS can be conserved.

## **OTHER SPECIAL ATTENTION AREAS**

As part of the proposed conservation strategy, evaluators understand that unlimited incidental take of the MGS would be authorized outside protected portions of military bases and outside the proposed MGS Conservation Area. Within these take areas, evaluators identified three regions requiring special attention: (1) a Biological Transition Area; (2) a Los Angeles County Zone Maintenance Area; and (3) a Kern County Study Area.



# Map 3-1

## **Biological Transition Area**

It is necessary to ensure that new ground disturbing activities located near the MGS Conservation Area would not degrade its ability to conserve and recover the squirrel. Therefore, an area one mile in width and adjacent to the MGS Conservation Area should be designated as a “Biological Transition Area.” Within this region, special project review criteria would be applied to ensure that projects would not affect the biological integrity or conflict with the conservation goals of the MGS Conservation Area. This should include the application of take-avoidance measures.

## **Los Angeles County Zone Maintenance Area**

Much of the MGS Conservation Area is comprised of BLM lands. The eastern and central portion of this area is within the Fremont-Kramer and the Superior-Cronese Tortoise DWMA's; some is designated as wilderness. Measures implemented for the tortoise are expected to benefit the MGS. Extensive areas to the north (on China Lake) and west (Edwards Air Force Base) are currently managed by the military in a manner that benefits MGS conservation. Similar protections are not afforded to MGS habitats in the southern portion of its range, which may be completely lost if proactive measures are not implemented.

The evaluators recommend that an area within the southern portion of the squirrel's range be delineated in which existing county zoning would remain in place for the 30-year term of the Plan. Under this proposal, new zoning that identifies lower density development is acceptable, but new zoning that allows for higher densities is not. This area, found entirely within Los Angeles County, is bordered to the west by Big Rock Creek, to the east by the Los Angeles-San Bernardino County line, to the north by Edwards Air Force Base, and to the south by the San Gabriel Mountains (and the southern boundary of the planning area) (Townships 4 North - 7 North, Ranges 8 West - 9 West).

## **Kern County Study Area**

In 1993, the Department (Gustafson 1993) modified the map of the *historic* range of the MGS to indicate that, south of Mojave and California City, the suspected *existing* range no longer extended west of Highway 14. Since that time, there has been some discussion of the possible occurrence of MGS in Kern County in areas southeast of the Tehachapi Mountains.

The evaluators recommend that focused MGS trapping surveys be completed in this area (to be delineated) to see if the MGS still occurs there. If it does, the evaluators recommend that existing zoning be maintained in the area for the remainder of the term of the Plan. If the genetic make-up of any squirrels trapped in this area is significantly different from that of squirrels occurring elsewhere in the range, the evaluators

recommend that the area be considered for some level of higher protection. It may be appropriate to include the lands in the MGS Conservation Area.

## **MGS MANAGEMENT PRESCRIPTIONS**

Given the negative trapping results of 1998 and 1999 in what was considered ideal habitat (Leitner 1998b, 1999), the likely loss of extensive habitats on private lands to the south and around California City, and the fact that all of the known MGS habitat occurs within the planning area, evaluators concluded that it is important for managers of the public land within the MGS Conservation Area to apply measures to preserve the quality of the conserved habitat. Within this area, evaluators propose that these measures be applied equally on public and private lands as a condition of project approval for the public-land portion. For example, if a permit requires revegetation of a pipeline right-of-way, the planting would occur on both the public and private portions of the pipeline. In this way, those currently privately-held parts of the MGS Conservation Area important for long-term persistence of the squirrel may retain their value for the species.

These measures are recommended by the Department, which, as the State permitting agency, issues incidental take permits for the MGS, and by the Service. The Service will provide assurances to participants in the Plan that, should the MGS become federally listed during the term of the Plan (expected to be 30 years), the Plan will serve as the basis for Federal incidental take permits for this species. The Plan will also serve as the BLM's Habitat Management Plan for the MGS. Evaluators recommend the management prescriptions listed herein to minimize the impacts of take of the MGS incidental to an otherwise lawful activity. These prescriptions must be stipulated requirements attached to permits and biological opinions issued by the local jurisdictions and State and Federal agencies.

In the following sections, we reiterate the proposed management areas identified in the previous sections, and follow that with specific management prescriptions proposed by the Department and Service.

### **Management Area Boundaries and Function**

The evaluators recommend that a conservation area be established for the long-term survival and protection of the MGS. This MGS Conservation Area should include portions of the Fremont-Kramer and Superior-Cronese Tortoise DWMA's, and additional, essential habitats located west and north of the two tortoise conservation areas. This area would be managed by the BLM as an Area of Critical Environmental Concern and would have a Limited Multiple-Use Class. The MGS in all other areas would either be managed by the military or be available for incidental take subject to restrictions identified during the planning process.

Biological Transition Areas (1) should be established within one mile of the MGS Conservation Area; (2) would be available for incidental take; (3) should function to minimize impacts on the adjacent conservation area, which may call for higher development standards (i.e., more protective mitigation measures) than in other take areas; and (4) may require special review of proposed projects by the Plan's Implementation Team.

An area of northeastern Los Angeles County should be designated for no zone change; existing zoning would apply to the area for the term of the Plan (expected to be 30 years). The approximate area (pending public input) is bounded to the west by Big Rock Creek, to the north by Edwards Air Force Base, to the east by the Los Angeles-San Bernardino County line, and to the south by the boundary of the planning area. This area is herein referred to as the "Los Angeles County Zone Maintenance Area."

Trapping studies should be undertaken in the northern portion of Antelope Valley in Kern County. If these studies reveal that MGS occur, existing zoning should be maintained for the remaining term of the Plan. If the genetic make-up is determined to be significantly different from that of other MGS in the planning area, the area should be considered for conservation-area status or other protection more restrictive than that provided by existing zoning. Herein, this area (yet to be delineated) is referred to as the "Kern County Study Area."

## **Funding & Fee Structure**

The public needs to decide on an appropriate fee structure. Evaluators suggest that fees be relatively higher in the MGS Conservation Area and relatively lower in Biological Transition Areas and other take areas.

Identify construction types and locations that would be exempt from fees or other mitigation; consider single-family scenario versus commercial, industrial, high density development (determine dichotomy or variable approach to fee requirements).

Discuss mechanism for other funding sources, so that fees are not only based on new development and ground disturbance.

Discuss mitigation and compensation strategies for projects in all management areas that would discourage but not prevent new development inside the MGS Conservation Area. Evaluators recommend compensation ratios of 1:1 outside the MGS Conservation Area and 10:1 inside that area.

## **Plan Management**

A West Mojave Implementation Team should be created to assist in carrying out project-

specific measures for projects in the MGS Biological Transition Areas to ensure that the project's indirect impacts do not adversely affect protection of the MGS in adjacent conservation areas.

The Service plans on providing at least two full-time people stationed in Barstow to implement the Plan, and assist with monitoring on-the-ground compliance.

The Department will consider the feasibility of providing permanent, dedicated position(s) towards implementation of the Plan and on-the-ground compliance.

Increase the frequency of BLM ranger patrols in the MGS Conservation Area at sites where prohibited activities are identified.

### **Prescriptions Specified for Land Managers**

**BLM Use Designations:** Multiple Use Classes identified in the CDCA Plan should be Class L or C (existing Wilderness) in the MGS Conservation Area. The MGS Conservation Area should be designated as an Area of Critical Environmental Concern (ACEC) for protection of the squirrel.

Within the MGS Conservation Area, management prescriptions should be applied equally on public and private lands (e.g., if required, revegetation would occur on both public and private portions of a given pipeline).

Designation of the MGS Conservation Area and implementation of agreed-upon management prescriptions will serve as the BLM's mandated Habitat Management Plan for the species.

Reclassification of public lands within the MGS Conservation Area as Class L (Limited) will satisfy the BLM's need to complete these actions on previously identified lands as mandated by the Rand Mountains Plan.

**Military:** Request (with help from the evaluators, if asked) military bases to provide information (including management zone boundaries) for analogous management areas on Edwards Air Force Base, China Lake Naval Air Weapons Station, and Fort Irwin (including Goldstone Deep Space Communications Complex) with those designated outside; consider areas included in China Lake's biological opinion; consider Edwards' INRMP and enforce biological opinions; etc.

Applicable management prescriptions given in military INRMPs, biological opinions, etc. that would result in the conservation of MGS should be adopted and endorsed by the West Mojave Plan; specific management zones have been delineated for Edwards and China Lake.

Develop specific mitigation measures for specific project types (pipelines, road-widening, etc.) that may be used inside and outside the bases.

### **Prescriptions for Surveys**

Under the proposed conservation strategy, the Department would not require Cumulative Human Impact Evaluation Forms (CHIEFs) to be completed, nor would trapping be required. A brief site visit to determine if compensable habitat would be lost to a given project may be appropriate.

### **Prescriptions for Non-Land-Use Impacts**

**Education:** The Plan should develop a curriculum on environmental education (or identify agencies to do this) that can be presented to school districts. Means should be identified to ensure that this curriculum will be used (i.e., can counties and cities ensure that this program is implemented?).

The West Mojave Implementation Team should work with OHV groups (AMA, CORVA, etc.) to establish meaningful education brochures and mechanisms to discourage cross-country travel.

Consider signing pertinent areas along the boundary of the MGS Conservation Area.

**Predation:** Dogs off-leash accompanied by their owners would be allowed in all areas.

### **Prescriptions for Land-Use Impacts**

**Agriculture:** Loss of native habitat to new agriculture should be compensated by paying appropriate fees, restoring appropriate agricultural areas, or implementing other, appropriate compensation measures. Recommend discouraging new agriculture in the MGS Conservation Area.

**Camping:** Inside the MGS Conservation Area, all vehicle camping, stopping, and parking should be restricted to previously disturbed areas within 50 feet of existing roads.

**Commercial Filming, Plant Harvest, etc.:** Commercial activities, such as commercial filming within MGS habitat, that result in ground disturbance or adverse effects may be allowed in the MGS Conservation Area but only if construction measures applicable to temporary construction impacts are applied (see following section). Plant harvesting in MGS habitat should not be allowed within the MGS Conservation Area.

**Construction Measures:** Consider dichotomy between permanent impacts (solar power plant, facilities development, etc.) and intrusive but temporary impacts (pipelines, fiber

optic cable, etc.). Pipelines within the MGS Conservation Area should be revegetated with native species; revegetation is recommended within Biological Transition Areas but not in other take areas.

Rather than focus on what will and will not be allowed, define general criteria: permanent versus temporary impacts, single time impacts (e.g. pipeline booster station) versus ongoing impacts (e.g. solar plant employing 100 workers) and discuss management prescriptions that would apply.

The Plan should include standard mitigation measures for ground-disturbing construction projects, such as (a) pipelines, (b) parcel development, (c) mines, and (d) highway construction and maintenance.

**Fire Management:** Wildland fire management should be allowed in all areas. A qualified resource advisor must be present.

Fire suppression should be a mix of aerial attack with fire retardant, crews using hand tools to create firebreaks, and mobile attack engines limited to public roads and designated open routes.

Use of earth-moving equipment or vehicle travel off public roads and designated open routes should not be allowed except in critical situations where needed to protect life and property.

Incoming fire crews unfamiliar with habitat protection should receive an awareness program to minimize impacts.

Post-suppression mitigation should include rehabilitation of firebreaks and other ground disturbances using methods compatible with management goals.

**Hunting & Shooting:** Hunting should be allowed and regulated by current legislation.

**Mining:** In the MGS Conservation Area, restoration under SMARA or other applicable laws should strive to reclaim lands to constitute MGS habitat as a goal.

Identify areas for site-specific withdrawals from mineral entry to facilitate MGS conservation. If studies reveal an MGS source area that has been identified for mineral extraction but is not patented, consider mineral withdrawal for that specific location.

The 32,590 acre region identified in the Rand Mountains Plan for withdrawal from mineral entry should be withdrawn as mandated by that plan. The West Mojave Plan may provide funding or otherwise facilitate this withdrawal.

Access for mineral development should be limited to designated open routes; alternatively, all exploratory activities should be compensated and monitored to minimize impacts to the vegetation community. Working with the monitor, the project proponent should eliminate any roads or cross country tracks that result from exploratory activities. The goal is to eliminate these tracks so that they are not used for future travel through the area.

**Motorized Vehicle Access:** No vehicles should be allowed off designated routes in the MGS Conservation Area.

Limited speed travel on designated, signed routes should be allowed in the MGS Conservation Area.

Closure of routes as determined for route designation should be implemented, in a manner conducive to restoring native habitat.

Travel in washes in the MGS Conservation Area should only be allowed in those washes that are signed as “open.”

Cross-country vehicle travel should not be allowed for commercial activities in the MGS Conservation Area.

**Motorized Vehicle Events:** No racing should be allowed in the MGS Conservation Area.

Dual Sport events would be allowed year-round in non-MGS Conservation Areas, and only seasonally in the MGS Conservation Area. Dual Sport events in the MGS Conservation Area would be allowed in the period of September through December only; the prescriptions given in the biological opinion for tortoises should apply.

**Open OHV Use Areas:** Consider impacts of applicable open off highway vehicle use areas, which include El Mirage, Spangler Hills, and Jawbone Canyon, and determine measures to minimize impacts.

There should be no new open areas in the MGS Conservation Area.

**Pipelines:** All pipeline alignments within the MGS Conservation Area should be revegetated; narrowing the ROW impact should be required.

**Recreation:** Non-consumptive recreation (e.g., hiking, birdwatching, horseback riding, and photography) should be allowed within the MGS Conservation Area.

**Research:** Focused MGS trapping studies should be performed along the northern boundary of the planning area in the Kern County portion of the Antelope Valley. Other



field research designed to address questions regarding the biology of native species or regarding impacts of land-use practices on these species should be allowed in the MGS Conservation Area.

**Sheep and Cattle:** Measures applied by the CDCA Plan to govern sheep grazing within Tortoise habitat should also be applied throughout the MGS Conservation Area. These include the following:

- Allotments classified as ephemeral sheep operations will be managed under ephemeral authorizations. Authorizations will be issued after an interdisciplinary team, along with grazing operators involved, make a field examination of the allotment and determine whether production of 200 pounds per acre of dry weight will be available, except in the MGS Conservation Area, where a 350 pounds-per-acre requirement is specified.
- The allowable use would not exceed that which would leave an average of 350 pounds residual forage within the MGS Conservation Area at the end of the growing season.
- Turnout dates for sheep on ephemeral forage within the MGS Conservation Area will be determined by consultation with the grazing operator, BLM range conservationist, BLM wildlife biologist, and county agricultural extension agent. Turnout dates will be based on the emergence of the MGS (generally in late January or February) and availability of a minimum of 350 pounds per acre dry weight ephemeral forage.
- Grazing will be restricted to one pass by sheep in the MGS Conservation Area. Concentration areas for livestock will be designated, such as watering sites and sheep bedding areas.

When monitoring studies on key areas show over 50 percent use of key perennial species, [for the time being,], appropriate adjustments will be made to bring the use within carrying capacity. Initially, “key perennial species” will include winter fat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*) and saltbush species (*Atriplex* ssp.). These are based on the research of Dr. Phil Leitner and may need to be changed under an adaptive management program if other perennial species are identified as being as important to MGS foraging ecology.

If BLM monitoring studies indicate that range conditions are not meeting standards, consider retiring ephemeral allotments covering those non-compliance areas during an *El Niño* event and subsequent year(s) to allow for recruitment of new perennial plants into that area.

The Plan should provide a mechanism for voluntary retirement of cattle allotments throughout the range of the MGS.

Cattle grazing may occur in the MGS Conservation Area with adaptive prescriptions that protect the MGS and its habitats (e.g., variable management during drought years).

Supplemental feed (hay, alfalfa, etc.) and food supplements (nitrogen supplements like molasses) should not be allowed in the MGS Conservation Area.

The rancher should contact the BLM for range improvements requiring off-road use of equipment; routine maintenance should be restricted to existing roads; unreported off-road travel should be authorized to remove cattle carcasses. (Reflects current management.)

Herding of cattle should be minimized, and cattle allowed to disperse throughout the area of use. Water sources should be widely distributed and of sufficient number to minimize focused impacts.

**Utility Corridors:** Contingent corridors identified in the CDCA Plan, should not be activated within the MGS Conservation Area. This recommendation would affect BLM contingent corridor P, which runs from Kramer Junction northeast to the Indian Wells Valley.

Maintenance of existing utilities should be allowed and should require minimization of impacts to the MGS and its habitats; all maintenance activities should remain on existing access roads except for the point location of maintenance-related disturbance.

The evaluators endorsed the CDCA Plan's designation and use restrictions for utility corridors, which follow:

- (1) Minimize the number of separate rights-of-way by utilizing existing rights-of-way as a basis for planning corridors;
- (2) Encourage joint use of corridors for transmission lines, canals, pipelines, and cables;
- (3) Provide alternative corridors to be considered during processing of applications;
- (4) Avoid sensitive resources whenever possible;
- (5) Conform to local plans whenever possible;
- (6) Consider wilderness values and be consistent with final wilderness recommendations;
- (7) Complete the delivery-systems network;
- (8) Consider ongoing projects for which decisions have been made; and
- (9) Consider corridor networks which take into account power needs and alternative fuel resources.

Within existing corridors, attempt to use areas that are already disturbed rather than disturbing new areas within the two to three mile-wide corridor.

**Weeds:** Invasive weeds should not be used in landscaping adjacent to the MGS Conservation Area; e.g. African daisies along roadways.

Management prescriptions designed to minimize impacts associated with other threats, particularly OHV, grazing, fire, construction, etc. will assist in minimizing continued spread of non-native plant species.

### **Allowable Ground Disturbance in the MGS Conservation Area**

Evaluators propose that permanent new ground disturbance within the MGS Conservation Area be limited to one percent (1%) of existing habitat. This allowable ground disturbance would apply to both public and privately held lands and to all projects regardless of size within the MGS Conservation Area. An allowance is necessary to avoid grossly diminishing the amount and quality of land that is designated for MGS conservation.

### **Purchase of Private Lands**

All compensation lands acquired for MGS conservation must be located within the MGS Conservation Area. Acquisition of all private lands within the MGS Conservation Area, together with management prescriptions tailored to conserve the MGS and its essential habitats, should be a goal of the Plan.

## **RESEARCH AND MONITORING PROGRAM**

One goal of the Plan is to ensure that the biological management program for the MGS will continue to meet legal and biological requirements throughout the life of the Plan. A monitoring strategy will be designed and implemented to ensure that the management program for the MGS is accomplishing its objectives. The Team will solicit input from the MGS Technical Advisory Committee as to the best monitoring plan for this species.

## **ADDITIONAL PROCEDURES, MEASURES, AND CONCEPTS**

In concert with the management prescriptions that should be applied in the MGS Conservation Area, evaluators propose the following measures to improve the likelihood of a successful Plan.

### **Tracking Group**

Evaluators propose that a group be established to independently track implementation of the Plan. The group, as a unit of the Implementation Team, should be composed of individuals with technical expertise in biology and land management.

## **Military Coordination Group**

Evaluators recommend that a group be established to coordinate with, and assist if requested, staff of the three military installations discussed in Part A of this chapter in devising and implementing MGS conservation programs on those installations. This group should be a unit of the Implementation Team.

## **Adaptive Management**

Although the Department currently provides no analogous recommendations for section 2081 permits, the Service has recommended that adaptive management concepts be incorporated into HCPs (Habitat Conservation Plans) to minimize the uncertainty associated with listed species where there are gaps in the scientific information or their biological requirements (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1996).

In an HCP, adaptive management is used to examine alternative strategies for meeting measurable biological goals and objectives through research and/or monitoring, and then, if necessary, to adjust future conservation management actions according to what is learned (U.S. Fish and Wildlife Service 1999). The primary reason for using adaptive management in HCPs is to allow for changes in the mitigation strategies that may be necessary to reach the long-term goals (or biological objectives) of the HCP, and to ensure the likelihood of survival and recovery of the species in the wild (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1996).

A practical adaptive management strategy within the operating conservation program of a long-term incidental take permit will include milestones that are reviewed at scheduled intervals during the lifetime of the incidental take permit and permitted action. If there is a relatively high degree of risk, milestones and adjustments may need to occur early and often (U.S. Fish and Wildlife Service 1999).

In general, the following means can be applied to gauge success of a plan and, if deficiencies or necessary modifications are identified, to implement adaptive changes in management:

- Monitoring
- Changed circumstances
- Unforeseen circumstances
- Plan modification

## **Monitoring**

The following types of monitoring must be implemented with the Plan: (1) biological monitoring, and (2) tracking Plan implementation and effects.

For biological monitoring, evaluators recommend that the Department's Technical Advisory Committee for MGS be consulted to help develop a meaningful monitoring plan.

To aid in tracking implementation of the Plan, evaluators propose that each participating jurisdiction provide a quarterly accounting of MGS habitat lost within incidental take areas outside of the MGS Conservation Area as a result of Plan authorization. Monitoring efforts by the Plan's Tracking Group should keep independent track of this loss. The Tracking Group should incorporate the results of its field investigation and the quarterly jurisdiction reporting into the GIS data base developed for the Plan. The Tracking Group also should track Plan-authorized take of MGS habitat within the MGS Conservation Area and the Biological Transition Area. The unit should maintain the data base to keep it current and should be able to regularly report cumulative habitat loss as the allowable ground disturbance acreage is approached.

## **Changed Circumstances**

Changed circumstances are defined as changes in circumstances affecting a species or geographic area covered by an HCP that can reasonably be anticipated by plan developers, the Service, or the Department for which contingency plans can be prepared (e.g., the new listing of a species, a fire, or other natural catastrophic event in areas prone to such an event). If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and these additional measures were already provided for in the plan's operating conservation program (e.g., the conservation management activities or mitigation measures expressly agreed to in the HCP or Implementing Agreement), then the permittee will implement those measures as specified in the plan.

However, if circumstances and such measures were not provided for in the plan's operating conservation program, the Service will not require these additional measures absent the consent of the permittee, provided that the HCP is being "properly implemented" (properly implemented means the commitments and the provisions of the HCP and the Implementing Agreement have been or are being fully implemented).

If a new species that is not covered by the HCP but that may be affected by activities covered by the HCP is listed under the Federal Endangered Species Act during the term of the section 10(a) permit, the section 10(a) permit will be reevaluated by the Service and the HCP-covered activities may be modified, as necessary, to ensure that the activities covered under the HCP are not likely to jeopardize or result in the take or adverse modification of any designated critical habitat of the newly listed species. The permittee

shall implement the modifications to the HCP-covered activities identified by the Service as necessary to avoid the likelihood of jeopardy, take or adverse modification of the designated critical habitat of the newly listed species. The permittee shall continue to implement such modifications until such time as the permittee has applied for and the Service has approved an amendment of the section 10 permit, in accordance with applicable statutory and regulatory requirements, to cover the newly listed species or until the Service notifies the permittee in writing that the modifications to the HCP-covered activities are no longer required to avoid the likelihood of jeopardy or adverse modification of designated critical habitat of the newly listed species.

### **Unforeseen Circumstances**

The Department has not identified measures to address unforeseen circumstances. Unforeseen circumstances, typically addressed in HCPs under the Federal Endangered Species Act, are "...changes in circumstances surrounding an HCP that were not or could not be anticipated by HCP participants and the Service, that result in a substantial and adverse change in the status of a covered species" (H.R. Rep. No. 97-835, 97<sup>th</sup> Congress, Second Session In U.S. Fish and Wildlife Service and National Marine Fisheries Service 1996).

Unforeseen circumstances generally fall into one of the following categories: (1) Type A events, which do not significantly affect the outcome of the HCP or the level of take, (2) Type B events, which do significantly affect the HCP and/or take level. As an example, a Type A event in the case of this Plan would be a change in reporting procedures for the jurisdictions. Evaluators recommend that such unforeseen circumstances be resolved at the field staff level between the jurisdiction or the project proponent and the Implementation Team. An example of a Type B event is failure of a party to implement its responsibilities as outlined in the Implementing Agreement or failure to provide sufficient funds to implement mitigation measures. If this type of unforeseen circumstance cannot be resolved at the field staff level, the Implementation Team will notify the Department and Service of the circumstance, and the Department and/or Service may consider rescinding the party's authorization for take provided under the permit until the issue is resolved.

In the case of an unforeseen event, Service and Department staff who have functioned as the principal contacts for the proposed actions should be immediately notified. In determining whether such an event constitutes an unforeseen circumstance, the agencies should consider, but not be limited to, the following factors: size of the current range of the affected species; percentage of range adversely affected by the HCP; percentage of the range conserved by the HCP; ecological significance of that portion of the range affected by the HCP; level of knowledge about the affected species and the degree of specificity of the species' conservation program under the HCP; and whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of

the affected species.

If the agencies determine that additional conservation and mitigation measures are necessary to respond to the unforeseen circumstance where the HCP is being properly implemented, the additional measures required of the permittee must be as close as possible to the terms of the original HCP and must be limited to modifications within any conserved habitat area or to adjustments within lands or waters that are already set-aside in the HCP's operating conservation program. Additional conservation and mitigation measures shall involve the commitment of additional land or financial compensation or restrictions on the use of the land or other natural resources otherwise available for development or use under the original terms of the HCP only with the consent of the permittee.

## **Plan Modification**

The following discussion addresses the procedure for modifying a Federal 10(a) permit issued by the Service. Although no analogous procedure is in place for a State 2081 permit, evaluators recommend that a procedure be included and described in detail in the Plan and in State permits.

Under Federal law, an applicant may request plan modifications and amendments in a dated letter referencing the permit number. Procedurally, a permit amendment application is treated in the same way as the original permit application. Documentation needed in support of a permit amendment will vary depending on the nature of the amendment and the content of the original HCP. If the amendment involves an action that was not addressed in the original HCP, Implementing Agreement, or NEPA (National Environmental Policy Act) analysis, these documents may need to be revised or new revisions prepared addressing the amendment submitted. If the circumstances necessitating the amendment were addressed in the original documents (e.g., a previously unlisted species adequately addressed in the HCP is subsequently listed), then only amendment of the permit itself is generally needed (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1996).

## **Part D**

### **Anticipated Take of The Mohave Ground Squirrel**

The Department must identify the "take" of the MGS to be authorized by the section 2081 permit. Part D, herein, provides information that may be used in making this determination. This information includes a brief review of permits issued thus far for the species and the process utilized for issuing those permits, and describes the difficulties inherent in determining take for this species.

## **PREVIOUS AUTHORIZED TAKE OF THE MGS**

Between 1993 and present (September 2000), the Department issued approximately 20 section 2081 permits for take of the tortoise *and* the MGS and three section 2090 consultations that addressed impacts to both species. The Department's Region 6 has also issued one section 2081 permit and one section 2090 consultation for only the MGS, and is currently working on the issuance of another section 2081 permit for only the squirrel. Except for several projects involving only the MGS, the tortoise has always been the "trigger" that required consultation. A permit authorizing take of tortoises generally included the squirrel if the project site was within its geographic range.

Each of the seven federal section 10(a) permits issued thus far for incidental take of tortoises has been accompanied by a 2081 permit. Several of those projects (including a 160-acre parcel development in Victorville and a 35-acre sand and gravel mine in San Bernardino County) were within or near the range of the MGS, so that the 2081 permit authorized incidental take of both the tortoise and the squirrel.

A master memorandum of understanding between BLM and the Department governs BLM's management of state-listed species. In accordance with this memorandum, in 1984 the BLM California Desert District and the Department's Regions 4 and 5 executed a letter of concurrence (Letter) which specified stipulations and other procedures to be applied to mitigate or eliminate the effects of small projects on the MGS. The Letter applies to actions involving five acres or less of new ground disturbance occurring wholly on public lands. The BLM is required to log the actions, and submit an annual summary of such actions to the Department. Compliance with this procedure constitutes the "conference" requirement of the California Endangered Species Act (actions exceeding the acreage threshold require a "formal" conference). In practice, application of the Letter's requirements has not been uniform, particularly the reporting requirement. In view of the more comprehensive conservation strategy suggested by this report, the continued usefulness of the Letter's requirements needs to be considered.

## **DETERMINING TAKE OF THE MGS**

The Department's requirements for identifying take of the MGS has varied among its three affected regions. This inconsistency within the Department has its roots in the difficulty of determining the presence or absence of the MGS on a given project site. During the 1990s, the Department variously interpreted take of the squirrel in land-use changes as occurring only when animals are affected or at any time in which native vegetation within the geographic range is affected. In the early 1990s, the Department required that trapping surveys be performed to determine presence or absence of the MGS. Then, based on anecdotal accounts of the MGS being observed but not caught during trapping efforts, the Department concluded that trapping was not always an effective means of determining presence or absence of the squirrel.

As a result, for several years during the mid-1990s, the Department replaced trapping



surveys with a habitat assessment known as the “cumulative human impact evaluation format” or “CHIEF.” Due to the concern that loss of habitat alone, without knowing whether the MGS was present, may not constitute take, the Department ultimately abandoned the CHIEF assessment. Currently, the Department requires trapping on a project site if records indicate that the MGS historically occurred in the area or if the Department determines that vegetation on the site is habitat for the species.

Results of live-trapping for the squirrel during 1998 and 1999, following two years of above-average precipitation, indicate that the MGS may not presently occur where expected in areas that are relatively intact and little disturbed. Even so, habitats not currently occupied may still be essential to the species as it cycles through natural increasing and decreasing population trends. Thus, any project within the MGS range depicted in Map 7 will result in the temporary or permanent loss of historic or current habitat. Given the difficulty of trapping MGS and the inability to accurately characterize essential habitats, the Department has concluded that cumulative adverse impacts are likely to lead to jeopardy, and in many cases a strong likelihood of take of individuals results from disturbance of desert habitat. These effects warrant not only suitable mitigation in the Plan, but also appropriately conditioned, permitted take.

## **AUTHORIZED TAKE OF THE MGS IN THE PLANNING AREA**

Although evaluators cannot predict how much take of MGS will occur over the 30-year term of the Plan, they anticipate that most of the take will be in the urbanizing areas between Lancaster and Lucerne Valley, and around Barstow, California City, and Ridgecrest.

This evaluation report recommends the establishment of the following three types of areas to address take of the MGS:

- Incidental take areas, in which all historic MGS habitats may be developed.
- An MGS Conservation Area, in which take may occur, but be limited to 1 percent of new ground disturbance within the conservation area.
- A Biological Transition Area, consisting of a belt of land one mile wide within the incidental take area and adjacent to pertinent portions of the MGS Conservation Area. It would be identified for incidental take of all ground squirrels. Within the BTA, however, the Implementation Team would be required to analyze the potential indirect adverse effects of new projects on the adjacent MGS Conservation Area.

The MGS Conservation Area proposed herein is comprised of 1,583 square miles within the two proposed Tortoise DWMA's and an additional 1,425 square miles located mostly

west and north of these DWMA's. Thus, in sum, approximately 3,008 square miles are proposed for MGS protection, which is approximately 39 percent of the known geographic range of the species.

## **Part E**

### **Permit Compliance Summary**

Under the Plan, the Department will require neither trapping surveys nor habitat assessments outside of the MGS Conservation Area. The Plan would authorize the permanent loss of only 1 percent of the lands in the MGS Conservation Area. Project proponents will likely pay a variable fee (to be determined) depending on the location of their project relative to the MGS Conservation Area, the Biological Transition Area, or other take areas. It is recommended that fees be relatively higher for projects occurring in the MGS Conservation Area, but that fees be required for all projects within the historic range of the species. Fees should be used to acquire private lands within the MGS Conservation Area and implement other protective measures adopted by the public and implemented by the Plan.

The September 1999 tortoise Evaluation Report recommended that 2,426 square miles, or 16.6 percent of the planning area, be designated for DWMA-ACEC status to benefit the desert tortoise. It is estimated that 1,583 square miles of these Tortoise DWMA's are within the geographic range of the MGS, providing protection for about 22 percent of the known MGS range. The proposed MGS Conservation Area, including areas outside the proposed Tortoise DWMA's, is approximately 3,008 square miles in size, which is about 39 percent of lands within the known range of the species. This protection is in addition to MGS habitat nominally protected on military bases. Protection of these areas and implementation of appropriate conservation measures will result in protection of large, non-fragmented regions in which the MGS may persist.

## **Part F**

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